IN THE CLAIMS:

Claims 1-25 (Cancelled).

26. (Currently Amended) A protein, sulfiredoxin (Srx), which comprises at least one catalytic site having a motif: FXGCHR, wherein X is G or S **(SEQ ID NO: 15)**.

27. (Previously Added) The protein of claim 26, having a molecular weight of about 8 to 14kDa.

28. (Currently Amended) The protein of claim 26, which is a sulfiredoxin of a microorganism, plant or higher organism, which comprises between about 80 and 170 amino acids and at least the one catalytic site having the motif: FXGCHR, wherein X is G or S **(SEQ ID NO: 15)**, and having the following percentage identifies and similarities:

yeast/human: 32% identity and 67% similarity

yeast/plants: 23% identity and 39% similarity

yeast/mouse: 31% identity and 51% similarity

yeast/fungi: 80% identity and 9% similarity.

29. (Previously Added) The protein of claim 26, which is selected from proteins having sequences corresponding to SEQ. ID. Nos. 1-10.

30. (Previously Added) The protein of claim 26, which is from yeast and is Srx1, having a molecular weight of 13kDa.

31. (Previously Added) The protein of claim 26, which is from humans and is hSrx1, having a molecular weight of 13.6kDa.

32. (Previously Added) A protein which catalyzes reduction of Cys-SO_2H groups.

33. (Previously Added) The protein of claim 32, which catalyzes reduction of peroxyredoxin (Prx) in a superoxide (Cys-SO_2H) form to a corresponding thiol form.

34. (Previously Added) An isolated peptide corresponding to the catalytic site of Srx as defined in claim 26.

35. (Previously Added) A pharmaceutical composition, comprising an amount of a protein comprising a sequence selected from the group consisting of SEQ ID Nos. 1-3 and 5-10 and at least one pharmaceutically acceptable excipient, said protein amount being effective for testing a disorder arising from a defect in a Prx/Srx antioxidizing system in a mammal.

36. (Previously Added) A method of screening for disease by evaluating involvement of a Prx/Srx antioxidizing system, which comprises the steps of:

(a) bringing cells of a biological sample into contact, in vitro, with hydrogen peroxide (H_2O_2),

(b) detecting Prx-Cys_p-SO_2H formed, between about 1 hour and 4 hours after step (1), and

(c) establishing a ratio of amounts of Prx-Cys_p-SO_2H and of Prx-Cys_p-SH, from about 4 hours after step (1).

37. (Previously Added) The method of claim 36, wherein the disease is cancer.

38. (Previously Added) The method of claim 36, wherein the disease is a neurodegenerative disease.

39. (Previously Added) The method of claim 36, wherein the disease is aging.

40. (Previously Added) A method of screening for disease by genotyping of sulfiredoxin, using total RNA of a biological sample, which comprises the steps of:

(a) extracting the total RNA from the biological sample,

(b) preparing specific sulfiredoxin cDNA by amplification of the RNA using the following two primers:

GTCCCGCGGCGGCGGCGACG (SEQ ID No. 11)

AGCAGGTGCCAAGGAGGCTG (SEQ ID No. 12),

these sequences being located, respectively, upstream and downstream of the human sulfiredoxin ORE' (GenBank No. AAH47707),

(c) establishing its nucleotide sequence, and

(d) comparing with respect to a DNA sequence encoding an Srx protein, as defined above, derived from the same species as that of the biological sample to be analyzed.

41. (Previously Added) The method of claim 40, wherein the disease is cancer.

42. (Previously Added) The method of claim 40, wherein the disease is a neurodegenerative disease.

43. (Previously Added) The method of claim 40, wherein the disease is aging.

44. (Previously Added) A method of screening for diseases which entails relative quantification of the mRNA encoding sulfiredoxin from a total cDNA prepared from a human biological sample, by comparison with a reference sample.

45. (Previously Added) The method of claim 44, wherein the quantification comprises the steps of:

(a1) preparing cDNA from the total RNA by reverse transcription with appropriate primers, and in particular random hexanucleotide primers;

(a2) amplifying said cDNA in the presence of the pair of primers:

GTCCCGCGGCGGCGGCGACG (SEQ ID No. 11)

AGCAGGTGCCM\GGAGGCTG (SEQ ID No. 12),

in the presence of a fluorescent reporter, and simultaneously or sequentially,

(a3) detecting the amount of the amplimer (or amplicon) by measuring the fluorescent signal.

46. (Previously Added) The method of claim 45, wherein the disease is cancer.

47. (Previously Added) The method of claim 45, wherein the disease is a neurodegenerative disease.

48. (Previously Added) The method of claim 45, wherein the disease is aging.

49. (Previously Added) The method of claim 45, wherein the fluorescent reporter is selected from the group consisting of agents that bind to double-stranded DNA and fluorescent probes.

50. (Previously Added) The method of claim 45, wherein when said fluorescent reporter is a probe, it is selected from the group consisting of the probes defined by the following sequences:
TTAATTGAATTCATGGGGCTGCGTGCAGGAGG (SEQ ID No. 13) and
TTTTCCTTTTGCGGCCGCCTACTACTGCAAGTCTGGTGTGGATG (SEQ ID No. 14).

51. (Currently Amended) A method of screening for disease which comprises the steps of:

a) immunodetecting an Srx protein in a biological sample, using an antibody obtained by immunization of an animal with an Srx protein or the peptide FXGCHR, with X = G or S **(SEQ ID NO: 15)**, after separating total proteins by electrophoresis, and then

b) evaluating quality and amount of the Srx protein compared with a control Srx protein.

52. (Previously Added) The method of claim 51, wherein the disease is cancer.

53. (Previously Added) The method of claim 51, wherein the disease is neurodegenerative disease.

54. (Previously Added) The method claim claim 51, wherein the disease is aging.

55. (Previously Added) A method of obtaining plants having an increased stress resistance, which comprises evaluating a Prx/Srx antioxidizing system of a plant using the protein of claim 26, and selecting a plant based upon the evaluation.

56. (Previously Added) A host cell transformed with a recombinant vector comprising a sequence encoding an Srx protein, defined by a sequence selected from the group consisting of the sequences SEQ ID Nos. 1-3, 5, 6 and 8-10.

57. (Previously Added) The host cell of claim 56, which is an *S. cerevisiae* strain modified with a vector overexpressing the Srx1 gene.

58. (Previously Added) The host cell of claim 56, which is a mammalian cell modified with a vector overexpressing the hSrx1 gene.

59. (Previously Added) The host cell of claim 56, wherein the vector is an E. coli/S. cerevisiae shuttle vector comprising, at an EcoRI cloning site, a sequence encoding the Srx protein and the promoter of the Srx gene.

60. (Previously Added) A method of screening for medicinal products capable of modulating activity of a Prx/Srx antioxidizing system, which comprises the steps of:

(a) bringing a sample substance into contact with the host cells of claim 41, in the presence of hydrogen peroxide,

(b) detecting Prx-Cys formed, between about 1 hour and 4 hours after step 1), and,

(c) establishing a ratio of amounts of Prx-Cys and of Prx-Cys from about 4 hours after step 1).

61. (v) A method of screening for medicinal products for treating a condition arising from a fault in a Prx/Srx antioxidizing system, which comprises the steps of:

a) bringing a sample substance into contact with an extract of the host cells of claim 41, or a biological sample of a nonhuman transgenic animal selected from the group consisting of animals in which the gene of the Srx protein is knocked out and animals in which a gene of the Srx protein is overexpressed, in the presence of hydrogen peroxide,

b) measuring an antioxidizing activity of the Prx/Srx system of the mixture obtained in a), and

c) selecting the substances capable of stimulating or of inhibiting said activity.

62. (Previously Added) The method of claim 61, wherein the measurement of said activity is carried out by detecting the Prx-Cys_p-SO_2H formed, between about 1 hour and 4 hours after said bringing into contact according to step (a), and establishing the ratio of the amounts of Prx-Cys_p-SO_2H and of Prx-Cys_p-SH, from about 4 hours after said bringing into contact according to step (a).

63. (Previously Added) A method of screening for medicinal products, for treating a condition related to a fault in a Prx/Srx antioxidizing system, which comprises the steps of:

(a) bringing a sample substance into contact with nonhuman transgenic mammals selected from the group consisting of animals in which the gene of the Srx protein is knocked out and animals in which the gene of the Srx protein is overexpressed, and

(b) measuring survival of the animal.

64. (Currently Amended) Anti-Srx antibodies, obtained by immunization of an animal with an Srx protein defined by a sequence selected from the group consisting of the sequences SEQ ID No. 1-3, 5, 6 and 8-10 or the peptide FXGCHR, with X = S **(SEQ ID NO: 16)**, as claimed in claim 34.

65. (Previously Added) The anti-Srx antibodies of claim 64, which are monoclonal antibodies.

66. (Previously Added) The anti-Srx antibodies of claim 64, which are polyclonal antibodies.

67. (Currently Amended) A method of reducing a product comprising at least two cysteines with redox activity, which comprises the step of bringing said protein into contact with a sulfiredoxin (Srx), as defined in claim 26, which comprises at least one catalytic site having the following motif: FXGCHR, with X = G or S **(SEQ ID NO: 15)**, in the presence of ATP and magnesium.

68. (Previously Added) A method of synthesizing a product comprising Cys-SH residues from products comprising Cys-SO_2H residues, which comprises the step of reducing the product comprising the Cys-SO_2H residues to a product comprising Cys-SH residues, in the presence of a sulfiredoxin as defined in claim 26, ATP and magnesium.